

CLAIMS

What is claimed is:

1. An apparatus, comprising:
 - a housing including a first housing end portion having a round tapered wall defining a tapered cavity; and
 - a probe pin having a pin base portion rigidly mounted to the housing and a pin tip portion movably mounted to the housing for movement between a first position wherein the pin tip portion is disposed in a spaced-apart relationship with the pin base portion and protrudes into the tapered cavity, and a second position wherein the pin tip portion is moved toward the pin base portion relative to the first position.
2. The apparatus according to claim 1, further comprising a spring mechanism mounted between the pin tip portion and the pin base portion.
3. The apparatus according to claim 2, wherein the housing includes an internal wall defining a passageway that opens at one end into the tapered cavity; the pin base portion and at least a part of the pin tip portion being disposed in the passageway in spaced-apart relationship to the internal wall.
4. The apparatus according to claim 3, wherein the housing includes an insulating first sleeve portion disposed within the passageway and proximally located to the tapered cavity and an insulating second sleeve portion disposed within the passageway and distally located to the tapered cavity; the pin tip portion is slidingly mounted within the first sleeve portion; and the pin base portion is rigidly mounted in the second sleeve portion.
5. The apparatus according to claim 4, wherein the spring mechanism includes a helical spring having a first and a second spring end with the first spring end being disposed to engage the pin base portion and the second spring end being disposed to engage the pin tip portion.

6. The apparatus according to claim 5, wherein the housing includes a second housing end portion integrally formed with the first housing end portion to define a housing body; the second housing end portion having a plurality of threads; the housing body being formed of a conductive material; and the housing body being coupled to electrical ground through the plurality of threads.

7. The apparatus according to claim 4, wherein the pin tip portion, the helical spring, and the pin base portion are made of a conductive material; and a signal circuit is formed by the pin tip portion, the helical spring and the base portion with the base pin tip portion being electrically coupled to the first spring end of the helical spring and the second spring end of the helical spring being electrically coupled to the pin tip portion.

8. The apparatus according to claim 7, wherein the housing has a center axis; and the pin base portion; the pin tip portion, the tapered cavity, and the passageway are substantially centered on the center axis.

9. The apparatus according to claim 1, wherein the tapered cavity is configured and dimensioned to receive a coaxial connector.

10. The apparatus according to claim 9, wherein the tapered cavity has a conical frustum configuration.

11. The apparatus according to claim 10, wherein a largest diameter of the tapered cavity is substantially greater than the largest diameter of the coaxial connector.

12. The apparatus according to claim 1, further comprising a coaxial cable having an outer shielding ring conductor; an inner conductor surrounded by the shielding ring conductor; and a dielectric interposed between the shielding ring conductor and the inner conductor; and wherein the diameter of the shielding ring conductor is substantially less than the largest diameter of the tapered cavity.

13. A method, comprising:

- providing a test probe including a housing having a first housing end portion with a round tapered wall defining a tapered cavity and a probe pin within the housing having a pin base portion rigidly mounted to the housing and a pin tip portion movably mounted to the housing and protruding into the tapered cavity;
- providing a coaxial cable having an outer shielding ring conductor with a diameter substantially less than the largest diameter of the tapered cavity; an inner signal conductor surrounded by the ring conductor; and a dielectric interposed between the ring conductor and the signal conductor;
- slidably moving the ring connector along the tapered wall to center the coaxial connector relative to the pin tip portion; and
- engaging the pin tip portion with the signal conductor to move the pin tip portion between a first position wherein the pin tip portion is disposed in a spaced-apart relationship with the pin base portion and a second position wherein the pin tip portion is moved toward the pin base portion relative to the first position.

14. The method according to claim 13, further comprising spring biasing of the pin tip portion for longitudinal displacement in the direction away from the pin base portion.

15. The method according to claim 14, wherein the spring biasing of the pin tip portion includes spring biasing with a helical spring; providing a test probe further includes providing the first housing end portion, the pin tip portion, the pin base portion and the helical spring made of a conductive material and the method further comprising electrically grounding at least the first housing end portion and electrically coupling the pin tip portion and the pin base portion to a test signal by way of the helical spring.

16. The method according to claim 15, further comprising removably mounting and electrically coupling a second housing end portion of the housing to a test fixture, the first and second housing end portions forming a housing body formed of a conductive material.

17. A system, comprising:

- a test fixture including a test probe;
- the test probe including a housing having a first housing end portion with a round tapered wall forming a tapered cavity; the housing further having an internal wall forming a passageway terminating at one end in the tapered cavity; and
- the test probe further including a pin base portion rigidly mounted to the housing within the passageway and a pin tip portion movably mounted to the housing within the passageway for movement between a first position wherein the pin tip portion is disposed in a spaced-apart relationship with the pin base portion and protrudes from the passageway into the tapered cavity and a second position wherein the pin tip portion is moved toward the pin base portion relative to the first position.

18. The system according to claim 17, wherein the test fixture comprises a semi-automatic fixture.

19. The system according to claim 17, further comprising a spring mechanism mounted between the pin tip portion and the pin base portion.

20. The system according to claim 19, wherein the pin base portion and at least a part of the pin tip portion are disposed in the passageway in spaced-apart relationship to the internal wall.

21. The system according to claim 20, wherein the housing includes an insulating first sleeve portion disposed within the passageway and proximally located to the tapered cavity and an insulating second sleeve portion disposed within the passageway and distally located to the tapered cavity; the pin tip portion is slidably mounted within the first sleeve portion; and the pin base portion is rigidly mounted in the second sleeve portion.

22. The system according to claim 21, wherein the spring mechanism includes a helical spring having a first and a second spring end with the first spring end being disposed to

engage the pin base portion and the second spring end being disposed to engage the pin tip portion.

23. The system according to claim 22, wherein the housing includes a second housing end portion integrally formed with the first housing end portion to define a housing body; the second housing end portion having a plurality of threads; the housing body being formed of a conductive material; and the housing body being coupled to electrical ground through the plurality of threads.

24. The system according to claim 23, wherein the pin tip portion, the helical spring, and the pin base portion are made of a conductive material; and a signal circuit is formed by the pin tip portion, the helical spring and the base portion.

25. The system according to claim 24, wherein the housing has a center axis; and the pin base portion; the pin tip portion, the tapered cavity, and the passageway are substantially centered on the center axis.

26. The system according to claim 17, wherein the tapered cavity is configured and dimensioned to receive a coaxial connector.

27. The system according to claim 26, wherein the tapered cavity has a conical frustum configuration.

28. The system according to claim 27, wherein a largest diameter of the tapered cavity is substantially greater than the largest diameter of the coaxial connector.

29. The system according to claim 17, further comprising a coaxial cable having an outer shielding ring conductor; an inner conductor surrounded by the shielding ring conductor; and a dielectric interposed between the shielding ring conductor and the inner conductor; and wherein the diameter of the shielding ring conductor is substantially less than the largest diameter of the tapered cavity.